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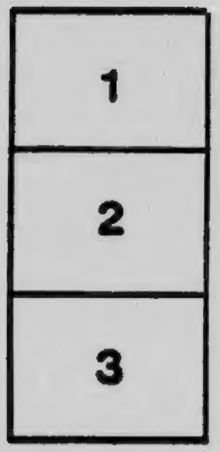

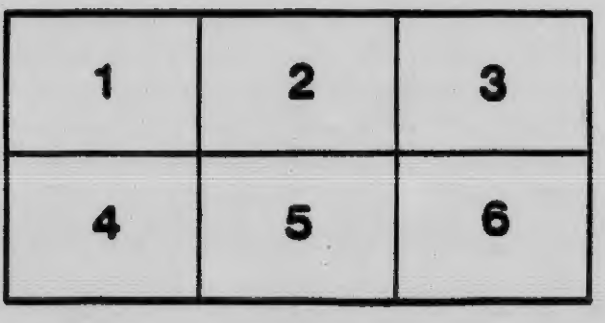

ECONOMICS

LESSON 16

By

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ECONOMICS

LESSON XVI.

Transportation Problems.

Note.—Before beginning this lesson, the student should read over carefully the latter half of Lesson IV, which deals with the development of the transportation system of Canada.

Transportation the Creation of Place-Utilities.

THE transportation of commodities, regarded from the economic point of view, is simply the creation of place-utilities—the increasing of the utility of a commodity by transporting it from a place where it has less utility to a place where it has greater utility. How do we know that a commodity has less utility in one place than in another? By a comparison of the market price of the commodity in the two communities. Generally speaking, we say that a commodity has less utility in one community than in another if its market price in the first community is less than in the second.*

This difference in the utility of a commodity in two communities may, however, exist without bringing about any transfer of that commodity from the place where its utility is less to that in which it is greater. Eggs may be selling ten cents a dozen dearer in Montreal than in Ottawa, but if the rate charged by the railway companies or the express companies for transporting them from Ottawa to Montreal be fifteen cents a dozen, no one will be likely to ship them. If, however, the rate were cut down to five cents per dozen, many people would commence to ship eggs from Ottawa to Montreal, since by so doing they would realize a gain of five cents per dozen.

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*I say "generally speaking," because the criterion is not absolute. One community may be so much poorer than another that, although the utility of the commodity may be greater than in the richer community, the market price will be less.

The rule deduced from the preceding argument is, then, a very simple one: Whenever the cost of production of an article in one community plus the expense of transporting it to a second community is less than the cost of producing it in the second community, the transportation of the commodity from the first place to the second will go on. When this is no longer the case, transportation will cease.

Economy of Transportation.

There is, therefore, a presumed economy in the transportation of all commodities that are actually transported from producer to consumer. The consumer could not obtain them so cheaply if they were produced where he is, as he obtains them when produced elsewhere and brought to him. All transportation, therefore, implies an economy, a saving of trouble and expense. After payment of all the charges made for transportation (and they amount to an enormous total sum), the cost of commodities is, nevertheless, much less than consumers would have to pay if these commodities had to be produced on the spot. We may be quite sure of this point at least—that the future will see transportation of commodities going on to a greater and greater extent and additional economies realized from better and more widely extended transportation systems.

The total gross earnings of our railways (in 1912, $219,400,000, or $29 per head of population, or $145 per family of five) represent a heavy charge upon the average citizen—perhaps 1/10 or 1/8 of his total income. This charge is unseen, but it enters into the cost of every commodity that has to be brought to him by rail. According to our argument there is no real loss to him, however, as the $145, relatively large sum as it is, is less than the extra amount which he would have to pay if all the commodities which he consumes had to be produced at home. The same may be said of the earnings of our steamships, interurban electric railways and our other means of transportation.

Economy of Transportation is Increasing.

Of course it is expedient for the country that the cost of transportation should be reduced to the minimum. It has been greatly reduced during the past generation. In the United States in 1909 the average rate for carrying a ton a mile on the railroad was .763 cents. In 1870 that rate was 1.889 cents; in 1880, 1.232 cents, and in 1890, .941 cents. Canadian freight rates have been reduced in somewhat similar fashion. In Canada in 1911 the freight rate per ton per mile averaged .777 cents. Freight rates are, therefore, very much lower than they were a generation ago, and thus a great many commodities can bear the cost of transportation which could not then. During the past few years, however, there has been evident, both in this country and the United States, a slight rise in freight rates, due, no doubt, to the increased wages, etc., paid by the railways as a consequence of the rapid increase in the cost of living.

While this is the cost of railway transportation, the cost of other transportation may be estimated as follows, per ton mile:

Ordinary road—25 cents.

Macadamized road—8—12½ cents.

Steamship (United States Steel Corporation Steamships running in Upper Lakes)—.107 cents.

Here also there is a tendency to increased economy. In the case of roads, this is shown by the movement for good roads, where the cost of transportation per ton mile is only about half what it is on our ordinary roads. In the case of steamships it is evidenced by the tendency to use larger and larger vessels which can be run at a lesser proportionate cost than smaller ones. The United States Steel Corporation now uses steamers of 15,000 tons, where it formerly used 5,000 ton vessels to bring down the ore from Lake Superior.

There is, therefore, a general tendency toward greater economy in transportation and the reduction of transportation rates. The slight increases in railroad freight rates during the past few years are an apparent rather than a real exception to the rule. Since railway freight rates are increasing more slowly than general prices, the percentage of the value of goods transported which is taken by the railways is less than it was a few years ago. If, as we may quite properly do, we regard the railway rate as analogous to the miller's toll, we should say that the railway takes a lesser toll now than formerly.

The Classes of Expense in Transportation.

In every process of transportation there are at least three elements of cost to be considered:

First, the cost of the human labour employed in the process.

Second: The interest on the cost of the vehicles and animals used in the process of transportation plus the wear and tear of the vehicles, the feeding of the animals, if any, or the expense of other motive power (e.g., the coal bill in the case of steam railroads or power bill in the case of electric railroads).

Third: The interest on the sums spent for the acquiring and constructing the right of way plus the cost of maintaining the same in good condition for traffic.

Toll-Roads vs. Public Roads.

A generation ago in this country there were many toll-roads—roads maintained by private individuals or by corporations who bore the expense of making the road, and of keeping it in repair and were consequently entitled to collect toll from all those who made use of it. In such a case, the user of the road bore the above-mentioned first and second costs of transportation, and paid to the company owning the road, a toll that would go to meet the third cost and to furnish a profit.

At the present time, the toll-roads have practically ceased to exist, and the user of the roads pays now, or seems to pay only charges one and two. Has item three been thereby eliminated from the list of transportation expenses? By no means.

To-day the roads are owned by the public—the counties and the townships and the urban municipalities. In some cases these roads were acquired by purchase from the private owners; in others, the roads were constructed by the municipalities themselves. In all cases the municipalities provide more or less adequately for the upkeep of the roads. The user of the roads has, it would appear at first sight, got rid of the third item in the expense account. The farmer goes to town and the townsman drives out into the country without paying a cent for the privilege of using the roads.

We have said, however, that the public pays the cost of construction and maintenance of highways. "The public" means everybody; every taxpayer has to contribute to the maintenance of roads and bridges. Thus in 1913 a taxpayer of the city of Toronto, assessed at $10,000 would have to pay $42.08 toward the expense of the maintenance of roads and bridges, sweeping, watering, etc. Item three in our transportation account is only transferred, not eliminated, when the maintenance of roads and bridges is taken over by the public.

There is, however, no doubt that, given reasonably efficient administration, the present method of constructing and maintaining roads and bridges is better than the old. The toll-gate on roads and bridges means the existence of a toll-keeper who must be paid out of the tolls collected before any of these tolls can be applied for the improvement of the maintenance of the road. Also, if the company has had to borrow money for constructing the road, it will, in all probability, have had to pay a higher rate of interest than the municipality would have had to pay. Possibly there are disadvantages when public roads are kept up by statute labour, and when such roads are constructed in localities where the traffic is not sufficiently great to enable them to earn interest on their cost of construction.

Economic Basis of the Good Roads Movement.

In all transportation, there are, as we have seen, three items of expense: the labour, the vehicles and animals used, and the construction and upkeep of the right of way. The Good Roads Movement is based on the assumption that by an increase of item three, that is, a higher expenditure on construction, and possibly on maintenance of the right of way, we can so decrease items one and two, that the result will be a handsome net saving to the community.

The Three Classes of Expenses in Water Transportation.

Take now the case of shipping. Here it would appear to the casual observer that items one and two were practically the only ones. But this is not really so. The interest on the cost of constructing harbours and of maintaining them must in general be borne either by the ships using those harbours or by the public. The expense of charting and buoying the routes, of maintaining lighthouses, of dredging, etc., is also usually borne by the public. If canals are on the route, the interest on their original cost and the current expense of maintaining them must be met either by charging tolls on the ships using the canals or out of the public treasury.

Tendency to Toll-Free Canals.

The tendency at present seems to be in the direction of making canals toll-free, and meeting the interest on the cost of construction and the maintenance charges from public funds, as in the case of roads. Thus, the State of New York, which is at the present time engaged in enlarging the Erie Canal, at a cost of $100,000,000, has provided, by the hard and fast method of constitutional enactment, that no tolls shall ever be charged for the use of the canal. This means that the public treasury will have to go on paying $4,000,000 per annum for all time, plus the maintenance charges of the canal, and get (directly, at least) nothing for it.

"When the canal is finished," says Taussig, "it will be as if Nature had made a navigable river. Doubtless more traffic will go to and through the City of New York; the rents of landowners there will swell still further; some consumers may gain in having goods cheaper. But it is at least open to question whether the labour which built the canal will yield its full normal results to the community. The test of its having been worth while must be whether canal tolls, sufficient to pay for the labour (and waiting) involved, could be borne by the traffic. It would be desirable, obviously, to have all transportation free, and to have every commodity produced, once for all, where it could be most cheaply produced. But so long as transportation involves labour and waiting, a real advantage from exchange is got only if, at the point of consumption, the total cost can be met, including that of transportation."*

The Doubtful Expediency of Toll-Free Canals.

One cannot but feel, then, that this remission of tolls "queers" our accounts—that it is impossible to tell whether the enlargement of the Erie is an economic enterprise or not. It is at least an open question. In the same way it is impossible to ascertain whether certain of our Canadian canals are economic enterprises. In some cases at least there are wide-spread suspicions that they have been undertaken rather to advantage a few and to help the Government in power to maintain its grasp on the constituencies through which they run. While a liberal margin of error should be allowed, since even the greatest experts in transportation matters make mistakes as to the profitableness or otherwise of constructing a certain line of railway or a certain canal, yet the deliberate construction of an uneconomic canal for the political advantage of the party in power, is a robbery of the public treasury. In some cases, of course, there is every prospect that a canal which will not pay immediately may yet pay ultimately, and in such cases the canal may well be built. Generally, the public should not undertake an enterprise which an expert would not advise a company to undertake under similar conditions.

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*Taussig's "Principles of Economics." Vol. 2, p. 365.

Three Classes of Expense in Railway Transportation.

In railways, too, there are the three chief items to be considered: (1) labour cost; (2) wear and tear of rolling stock and interest on their cost; (3) interest on cost of construction plus cost of maintaining the line.

When railways were first introduced in England, it was assumed that the rarilway companies would simply own the roadbed, as a toll-road company its road; that any man would own cars and run trains just as he would own and run canal boats or wagons, and would pay the railway company a toll for the use of their road, so that users would pay classes one and two of expense, and the Company only the third. In practical experience, such a method of operation was soon recognized as absurd, and almost all over the world railways are now operated throughout by the companies, or in some cases by the state.

When the state owns railroads, however, it sometimes transfers their management to private companies, maintaining a control over rates in order that the benefits to the public shall not be taken away. We have an interesting example of this in our own country in the case of the National Transcontinental, whose line from Moncton to Winnipeg is public property, but is leased to the Grand Trunk Pacific for a period of fifty years from the date of its completion, during the last forty-three of which the Company engages to pay to the Government 3 per cent. per annum on the cost of construction.

Railways the Chief Means of Transportation.

"The railway," says Professor Taussig of Harvard University, "is the most important among modern industries, both as regards its effects on the economic structure at large and as regards its own special problems." The railway has been the leading element in our transportation system. It has helped to promote the geographical division of labour and large scale production. More than other kinds of transportation, it presents great and important problems for solution. Itself a corporation, created under the laws of the state, it may exercise more power than the state itself in making and unmaking communities, cities and individuals along its route.

The balance of our lesson will therefore be concerned with railway problems. We shall best understand the most fundamental of these problems if we begin by a comparison of the earning powers of railways and manufacturers, as compared with their respective capital investments.

Railways Compared with Manufactures.

The manufactures of Canada had, in 1910, a total capital investment of $1,247,583,000 and an annual product of $1,165,975,000—the annual turnover being more than 93 per cent. of the total capital investment. Thus a profit of 6 per cent. on product would pay 5 per cent. to bondholders and shareholders, and still leave something over to be added to the surplus.

The railways of Canada had, in 1912, a capital of $1,588,937,000 (debentures, $818,478,000; stock, $770,459,000). The total receipts during the year were $219,403,000—or only 13.8 per cent. of the capital investment. In order to pay the very moderate dividend of 5 per cent. on capital, whether stocks or bonds, a railroad would have to set aside about 36.2 per cent. of its gross receipts—in other words, its operating expenses could not be more than 64 per cent. of its receipts and still leave a moderate return for bondholders and shareholders. As a matter of fact, the working expenses in the year ending June 30, 1912, were 68.7 per cent. of gross receipts, so that the actual return on capital invested was only 4.32 per cent. While there is, doubtless, considerable inflation in the capital, it is extremely unlikely that the average debenture-holder or shareholder, is earning 6 per cent. on his money.

Every Third Dollar Must Go to Bond or Share Holder.

Railway rates, therefore, must considerably more than pay the actual expenses of carriage. Out of every three dollars collected by the railway, at least one dollar should go to bondholders and shareholders. It would, of course, be pleasanter for the public if it had to pay only the actual expense of carrying the goods, but railways involve enormous expenditure on construction, and for the capital necessary to such expenditure interest must, on the average, be paid. While some railway lines are unable to pay dividends to their shareholders, railway shareholders must on the whole find the rate of interest that they receive equal to that received on other investments. Otherwise, they would cease to invest in railways, and would place their capital elsewhere. New railways would cease to be constructed, and, as a result, the development of the country would be hindered.

Large Upkeep Expenditure Irrespective of Amount of Traffic.

The second great feature of railways is that large expenditures are necessary to keep the line in fair condition for traffic, to maintain stations, etc. These expenditures are necessary whether the traffic is large or small, and the greater the traffic the larger is the area over which these great maintenance charges may be distributed. Consequently the expenditure as maintenance charge is less per ton mile where the traffic is large than where it is small. Increased traffic means, therefore, possible reduction of rates or else increased returns for shareholders. The first business of the railway man, therefore, is to get all the traffic he can at charges which will pay for the actual expense of transportation and leave something over for the shareholder. But a considerable part of this traffic is of low value in proportion to bulk, and can hardly pay its mere cost of transportation, let alone contribute toward the interest on the cost of the railway.* Therefore, our railway manager collects all that he can on the higher grades of goods.

Competition of Railways with Waterways.

Now, in certain places there is keen competition for traffic between railways and waterways, and in other places between different railway companies. In the first, the railways, unless they are able to secure control of the steamship companies, have to maintain, under strictly competitive conditions, a losing fight, since the actual cost of water transportation is so much less than that of land transportation. They have, however, some advantage on their side in the greater speed with which they transfer goods—especially "express goods"—from place to place. Often, too, they succeed in eliminating serious water competition by purchasing or coming to some sort of agreement with the steamship lines.

Competition of Railways with Each Other.

In places of the second class, railways may either indulge in more or less keen competition—sometimes in "cut-throat" competition—or they may come to some arrangement as to the basis on which passenger rates and freight rates are to be charged. As a rule, however, competitive points receive "better treatment" in the matter both of freight rates and passenger service than points at which one company has a monopoly of traffic. At points where competition actually goes on, the railroads are likely to find their rates forced down until the returns do little more than cover the actual expenses involved in transportation. They leave but a small margin as their contribution toward the payment of interest to debenture-holders, and of dividends to shareholders.

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*In the year 1909, out of a total freight movement in the United States of 1,460,000,000 tons, approximately 509,000,000 tons were coal and 75,000,000 tons sand and stone; that is, 40% of the tonnage carried was made up of these two low-valued articles alone, which would bear only the mere expense of their carriage.

Discrimination Between Competitive and Monopoly Points.

There is thus a discrimination between places established, and competing points tend to grow more rapidly than places where there is no competition—a fact which has played a by no means insignificant part in deciding which towns and cities shall increase in industries and population and which shall not. This discrimination, however, is not, as a rule, arbitrarily exercised. The railroad discriminates, for the most part, not because it wants to, but because it must. The law of competition forces it to make a difference, and the existence of such a law is recognized by the public authorities set up by our Government to control the actions, rates, etc., of railways, and to see that the public get fair play. These Commissions know enough not to insist that the railway shall give the same treatment to monopoly as to competitive points. They recognize that at competitive points the railway does not make much more than operating expenses, and that the money necessary to pay its bondholders and shareholders must be secured at monopoly points.

Discrimination Between Large and Small Shippers—The Rebate System.

There are other kinds of discrimination which have been practised by the railway companies. Notable among these is the discrimination between large and small shippers. This discrimination is natural enough. Usually, when any article is sold, the purchaser can get it at a cheaper price per unit if he purchases it in a large quantity. Manufacturers find themselves compelled to make special price concessions to those who are the largest buyers of their goods. So, too, railways have made special concessions of one kind or another to their largest customers—the largest shippers—in order to secure their trade and their good-will. This was usually done, not by openly cutting the rate for large quantities, but by giving rebates

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*Express companies are, for all practical purposes, special departments of the railway companies.

—by periodically returning to certain large shippers certain percentages of the rates paid by them during a given period of time. These specially low rates were extended with more or less of favoritism, and greatly aided certain companies to become predominant in their respective fields. The Standard Oil Company was particularly successful in obtaining rebates during its early history, and was thus enabled to undersell its competitors and to secure a practical monopoly of the market.

Public Interest in Preventing Discrimination Between Large and Small Shippers.

But the public was not in the least satisfied with this state of things. It regards the railway as a corporation deriving its existence from the state—an organization whose success is possible only because the state incorporates it and transfers to it part of its sovereign rights—notably the right of expropriating private property. (Railroads are, for instance, able to make private individuals sell them their property at the market price whether they want to or not.) In return for these concessions they must make concessions. They must recognize (and indeed they are doing so more and more) that they cannot be run just as any private business—that they must consider public interest as well as private profit.

Public opinion has come more and more to this point of view. Various investigations have revealed cases of what seemed to the public startlingly unfair discrimination, especially, of course, in the now famous case of the rebates allowed the Standard Oil Company. There has been much heated discussion, and finally it has come to be a widely accepted principle, that a railway may not discriminate between large and small shippers, provided the small shipper is shipping at least a carload. Higher rates are admittedly necessary for less-than-carload shipments, as these involve a proportionately heavier expense to the railway, which may not be able to fill a car with other goods, and has to do the same amount of shunting, etc., as if the car were full.

Discrimination Between Commodities.

Even before railroads came into existence, it was generally recognized that ship freight rates should vary with the value of the article shipped. The rate on coal was lower than that on iron, the rate on iron lower than that on cotton, and so on. Consciously or unconsciously, the rate charged for transportation was at least partly decided on the principle of what the traffic would bear.

The Classification of Commodities.

When railroads came into existence they began fixing their charges in competition with the existing means of transportation, and so their rates also were subject to a rough system of classification. That system of classification has been gradually becoming more elaborate, and this tended to confusion when each railroad adopted its own rates for all commodities. It was very difficult to figure out the rate for a commodity which had to travel a long distance over different railways. Finally, the railroads in different parts of the United States came to agreements as to classification of commodities, the highest class containing the most valuable commodities and paying the highest rates per hundredweight, and the other classes paying lower freight rates, down to coal, which probably, under most classifications, pays the lowest rate. The present Canadian joint classification is composed of ten classes.

How do railways decide which commodities shall go into each class? Various principles of classification have been suggested, and many of them have been actually tried in some country or other.

The Principles of Classification of Commodities.

First, a railroad might impose a uniform rate per unit of weight per mile. This would, however, practically restrict the sale of coal, etc., to a short distance from the mine, and coal is a necessity of modern life. Hence this principle has been abandoned.

Second, a railroad might impose a uniform rate per unit of weight without regard to distance, as the post-office does. But the commodities that the railway handles are so much heavier than those which the postoffice handles that cost of handling increases rapidly with increasing distance. So this principle is inequitable and absurd.

Third, a railway may impose a rate based on cost of service rendered. But, as Taussig has shown, it is beyond the power of man accurately to estimate what additional expense is incurred by a railway for the carriage of an additional ton weight of a certain commodity from Toronto to Montreal. The railways, however, do attempt to come to an approximate conclusion as to cost of service, and their minimum charges may be said to be fixed by that conclusion.*

Fourth, rates may be decided by value of goods. But these values are all the time varying in relation to each other, and we have learned that it is of the greatest importance that railway rates shall be comparatively stable. Those who are in business must be able to estimate what rates they will have to pay for the transportation of their raw materials and their finished product.

Fifth, freight rates may be decided by value of service rendered, that is by the difference in the utility of a commodity to its shipper and to its consignee. This, however, is a psychological abstraction. The increased utility of the commodity could be estimated only by someone who knows all about the two individuals. This principle is, therefore, impossible in practice.

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*Usually eastbound traffic costs more than westbound, other things being equal. This is because so many of the cars used by bulky western products en route to the east, have to be returned empty. Hence it may pay the railway to accept traffic for the west at very cheap rates.

The Principle Accepted by Railway Men.

Sixth, freight rates may be decided on the basis of "what the traffic will bear." This is the principle now universally accepted among railway men, and it implies that freight charges shall be fixed at the rate at which the traffic yields the highest net return to the company, and the monopoly price of transportation is decided just as the monopoly price of any other commodity or service is decided. (See Lesson VII., page 10.) This principle has the advantage of being experimental and practical. The railroad manager may fix different rates until he reaches the one which yields him the greatest net return, just as the hat manufacturer, in Lesson VII., fixed the price which would yield him the maximum of profit.

The Public's Right to Object to This Principle.

The trouble with this criterion is that it does not recognize the public interest in the game. The public, already incensed at the increasing cost of living, is keenly suspicious of all combinations of monopolistic or semimonopolistic tendencies. In the long run, the will of the people must prevail. In railway matters, the public interest, in such countries as Canada and the United States, is protected by the appointment of commissions, such as the Interstate Commerce Commission in the United States and the Dominion Railway Commission in Canada. In this country, which has done so much for the railways—given them great subsidies in money, in land, in guarantees of bonds which enable them to borrow at lower rates—the public have an excellent claim for consideration from the management of the railway, and are able to enforce it. At the same time the railway must be able to earn reasonable profits; otherwise, capital would not be forthcoming for the building of new lines of railway, and the development of Canada, in which we are all interested, would suffer.

The Powers of the Railway Commission.

The railways of Canada are placed under the jurisdiction of the Board of Railway Commissioners for Canada.

This body is composed of six commissioners and employs a traffic expert, a number of engineers, secretaries, clerks, etc. A single section of the Railway Act (Revised Statutes of Canada. 1906, Chapter 37, Section 323), will show the wide jurisdiction of this body over the railways of the country.

"The Board may disallow any tariff or any portion thereof, which it considers to be unjust or unreasonable or contrary to any of the provisions of this Act, and may require the Company, within a prescribed time, to substitute a tariff satisfactory to the Board in lieu thereof, or may prescribe other tolls in lieu of the tolls so disallowed."

EXAMINATION QUESTIONS

ECONOMICS.

LESSON XVI.

1. Prove that transportation usually involves an increase in the value of a commodity.
2. If transportation suddenly ceased, and the charges for transportation with it, would the cost of living be increased or diminished? Discuss.
3. Is there a movement for the improvement of transportation facilities in your locality? If so, what arguments are used by its advocates?
4. What classes of expenditure are necessary in all transportation? Discuss them.
5. Compare the toll-road system with the present-day system of road maintenance.
6. Discuss the advisability of levying tolls on traffic using the canals.
7. Compare the capital and "turn-over" of railways with those of manufacturing industries.

8. Imagine yourself in the position of a railway traffic manager and discuss the problems which he has to face.

9. Why do manufacturers usually prefer to locate their plants in towns having water transportation as well as a railway, or else having more railways than one? Discuss fully.

10. What fundamental differences between the railway business and the manufacturer's business make state control more justifiable in the first case than in the second?

11. What principles have been suggested as furnishing a basis for the fixation of railway rates? Discuss them.

12. Give a short account of the powers of the Board of Railway Commissioners for Canada. Find out from railway men, merchants, etc., just what it has done for your locality.